

giving a careful and detailed history of the various schemes considered by the City and Guilds Institute, which may be broadly stated as being three in number. The first of these schemes, proposing to build a central institution upon a site on the Corporation lands on the Thames Embankment, has been dismissed as essentially too costly. The second, the proposal to obtain a site from the Commissioners of the South Kensington Estate, is in abeyance since the ancient free "spirit" of the Companies leads them to regard as distasteful either that the Commissioners should be directly represented on the managing body of the Central Institution, or that, as an alternative, the chief scientific bodies of the nation should have the right of being represented on it. The third scheme, which apparently does not stand a much better chance of success than its predecessors, though having many points in its favour, was a proposal to buy the palatial mansion built by Baron Grant at Kensington, with its seven acres of ground, and convert it into a building for a Central Institution by slight but suitable alterations in its interior arrangements, thus obtaining capital laboratories and lecture theatres. But the unreasoning outcry raised against the site simply because it was in the west, and not in some equally inaccessible situation in the north or in the east, has been so loud in its tones that we believe the project has virtually been abandoned. At least so the semi-official article in the *Times* would lead us to imagine. Prof. Huxley has, however, had a last word on the matter. He cannot quite agree in the view that the guarantees asked by the Lords Commissioners are so unreasonable as the Livery Companies think them. In his second letter of the 29th ult. he says that if he is rightly informed, they amount to being guarantees firstly of sufficiency and permanency of endowment, and secondly of proper government; the desire of the Commissioners in reserving the right of nominating two or three members of the governing body being merely that they may insure the presence amongst the representatives of the city magnates that small number of "educational experts." To which Mr. Roberts quietly rejoined that educational experts differed considerably in the advice they tendered, and that the principal point of objection lay in the proposal that the two or three persons nominated by an exterior authority should be the only permanent members of a governing body the majority of whom were continually going off by rotation.

It is not our place to pronounce judgment upon the conflicting views which have been maintained concerning the conditions imposed by the Commissioners in their offer of a site. If Prof. Huxley's information is correct, it is hard to see how or why the independence of the Guilds, or of the Institute they have founded, should be impaired by the presence on the governing body of such men as, say, Mr. Lyon Playfair, or Mr. Mundella, or perhaps even Prof. Huxley himself. If, on the other hand, the Livery Companies have some further knowledge or insight than Prof. Huxley has, it would certainly be well if they would explain what it is that is incompatible with their ancient liberties, and would suggest some alternative course, which, while reserving them all reasonable liberty of action, should attain the ends for which guarantees are desired.

The most painful aspect of the whole controversy is

one which does not come to the surface in this correspondence, but which is nevertheless a very real one. There is a large section of the outside public who take a deep and increasing interest in the question of technical education, and who have watched the present scheme from its first inception with something more than curiosity. They cannot understand that any body of men really intending to carry out a project such as that which was made public two years ago could permit such endless delays, such interminable cross-purposes, such haggling over different schemes, as have been lately witnessed. They begin to fear that all these things are done with a purpose, and that the delays are interested, and the rival schemes manufactured to serve some less noble end. Whether such persons are right or wrong, all these whispers would be at once silenced by a few unmistakable signs of real progress, such as we have looked for in vain. The public knows well enough that the organisation of the City Guilds *as they are* is a blot upon an intelligent community; that they have ceased in all but name to represent the trades for the sake of which and out of which they arose. It knows full well that their unfathomed funds are not applied to the purpose of elevating and improving their respective crafts, whatever else they may be applied to. And it is quite prepared to say with emphasis when the moment arrives that if reform does not come from within it must come from without. The first step, if such measures must come, will doubtless be the appointment of a Royal Commission of Inquiry. What the second might be he must be bold who would predict.

The announcements made two years ago were hailed as a note of progress, indicating the probability that wiser counsels would prevail, and that the needed reform was to be brought about quietly and harmoniously from within. But the project for founding a Central Technical College is as far from realisation as ever, and the hopes raised have been sorely disappointed. Men of scientific habits and of business aptitudes are alike getting tired of the endless delays and fruitless negotiations that have taken place. And there are, we suspect, many who, on learning how one scheme after another has fallen through for want of unanimity of purpose to carry it out, will be quite ready to think that it was not without good cause that Prof. Huxley asked: *Do the Livery Companies of London intend to carry out any general scheme of Technical Education such as that adopted by their own Committee, or do they not?*

#### OSTEOLOGY OF MAN

*Catalogue of the Specimens Illustrating the Osteology and Dentition of Vertebrated Animals, Recent and Extinct, contained in the Museum of the Royal College of Surgeons of England.* By William Henry Flower, Conservator of the Museum. Part I. *Man*. (London: David Bogue, 1879.)

IT is now twenty-five years ago since Prof. Owen, the then Conservator of the Museum of the Royal College of Surgeons, completed the last volume of the catalogue of the osteological collection. Since that time the additions to the Museum have been so numerous and

valuable that the original catalogue has ceased to fulfil the requirements of the collection, and the preparation of a new catalogue has become necessary.

Prof. Flower, the present Conservator, has undertaken this task, and the first fruit of his labours is now before us. In this volume he has catalogued the specimens, 1,312 in number, which illustrate the development of the human skeleton, the osteology of adult man, the dentition of man, and the crania and other parts of the skeleton illustrating the osteological characters of the various races of men. This volume is, therefore, from the extent and variety of the collection, and from the methodical way in which the numerous measurements are recorded, an important contribution to physical anthropology.

In the introductory chapter Prof. Flower describes the method he has pursued in obtaining the measurements of the crania, and he explains the meaning of a number of terms, mostly introduced by Paul Broca, into craniology.

The measurements which he records are taken with especial reference to the determination of the circumference of the cranium, its length, breadth, and height and the relations of these to each other; the length from the anterior margin of the foramen magnum, on the one hand to the fronto-nasal suture, and on the other to the most projecting part of the upper alveolar arch, from which the alveolar index is deduced; the height and width of the nose; the height and width of the orbit; and the cubic capacity of the cranium. The capacity is expressed in cubic centimetres and the other measurements in millimetres.

In measuring the length of a skull craniologists are in the habit of taking the longitudinal diameter between the prominence at the root of the nose called the glabella, and the most projecting part of the occiput behind, a measurement which has the advantage of giving the absolute length of the cranium between its two most extreme points. Prof. Flower, however, does not follow this method, but prefers to take the length from the most projecting part of the occiput behind, to a point situated immediately above the projection of the glabella, to which Broca has given the name *ophrion*. This point is in the centre of a line drawn across the narrowest part of the forehead, which separates the face from the cranium. He has selected this point anteriorly, in preference to the glabella, on the ground that the glabella is properly a part of the face, and that it may vary much in development, without occasioning any alteration in the essential form of the cranium. Similarly in taking the horizontal circumference of the cranium he passes the tape line, not over the prominence of the glabella, as is customary with craniologists, but above it, around the supra-orbital line. Mr. Flower therefore entirely excludes this well-known prominence from his measurement of the cranium.

But in excluding the glabella from the cranium, on the ground that it belongs to the face, he does not appear in his measurements of the face, to have made provision for including the glabella, so that in these measurements a feature which gives a very decided character to the anterior region of the head is left out of consideration. This seems to us to be a defect, for if such a mode of mensuration were generally adopted, skulls possessing great projections in the glabellar and supraciliary regions, such as the well-known Neanderthal skull and the crania

of the generality of the Australian aborigines would not have, what undoubtedly constitutes one of their most salient and characteristic features, represented in a table of their dimensions, and the relations of their extreme length and breadth to each other, as expressed by the latitudinal cephalic index, would not be fully brought out.

It may, however, be argued that, by including the glabella in the longitudinal diameter and in the horizontal circumference, a portion of the cranial wall which lies superficial and owes its extent of projection to a subjacent air-containing space—the frontal sinus—and not to the brain cavity, is made to appear as if it were an essential part of the box containing the brain, and that the size of the cavity of that box is made to seem therefore to be greater than it really is. But to this it may be replied that the capacity of the cranial box, as capable of being deduced from external measurements, is affected, even when the glabella and supraciliary ridges are left out of consideration, by other causes, such as variations in the thickness of the *diplœ* and the development of ridges for muscular attachment.

The only reliable mode of ascertaining the capacity of the cranium is by actual measurement of what it can contain, and not by calculations based on the external dimensions of its walls. The longitudinal diameter of the cranium ought in our judgment to express the actual length of the skull between its two extreme anterior and posterior points, to whatever cause it may be due. The special mode of taking the length of the cranium, adopted in this Catalogue, is to be kept in mind in comparing, not only the length of the crania but their latitudinal and altitudinal indices, with the corresponding measurements recorded by those craniologists who take the length of the skull between its two most extreme points.

The several measurements have been made and recorded with that care and precision which characterises all the anatomical work done by Prof. Flower. To obtain reliable evidence of the cubic capacity, one of the most difficult and important measurements to procure, many thousands of experiments have been made to ascertain the best process, and some of the crania have been gauged several times over. The material used has been mustard seed, with which the brain cavity has been filled to its maximum and the quantity of the seed has then been taken with the choreometer designed and constructed by Mr. Busk.

In addition to the measurements recorded of the individual crania, the author has given a valuable table in which he summarises the general results that have been obtained from the examination of the skulls of the different races. This table shows clearly that after making allowance for variations in individual skulls, yet that the different races of mankind possess in the configuration and dimensions of their skulls certain tangible characters which may be expressed by distinctive terms. Thus, to select a few examples adduced by the author, from the races which are probably unmixed. The Veddah race of Ceylon is dolichocephalic, orthognathous, with the orbital and nasal apertures moderately wide in proportion to the height (*mesoseme* and *mesorhine*), and with the capacity of the cranium small (microcephalic). The Australian race, again, whilst dolichocephalic, and microcephalic as

regards the dimensions of the cranium, is prognathous, platyrrhine, and microseme in the measurements of the face. The now extinct Tasmanian race was, like the Australian, prognathous, platyrrhine, microseme, microcephalic, but in the relations of the length to the breadth of the cranium not dolichocephalic but mesaticephalic, *i.e.*, between dolichocephalic and brachycephalic. The Bushmen, whilst mesaticephalic, platyrrhine, microseme, microcephalic, are, as regards the upper jaw, not prognathous, but orthognathous. The Bush crania differ in an important manner from their near geographical neighbours the Kaffirs and Zulus, which, though platyrrhine in their nasal relations, are dolichocephalic and megacephalic in their cranial dimensions, mesognathous as regards the projection of the upper jaw and mesoseme in their orbital dimensions. The skulls of the African Negroes are dolichocephalic, mesocephalic, prognathous, platyrrhine, and mesoseme; whilst the Andamanese, of which the Museum possesses a remarkably good series, are brachycephalic, microcephalic, mesognathous, mesorhine, and megaseme. As regards the Australian and the dark races with frizzly hair dolichocephalism and prognathism, with small or moderate cranial capacities prevail, except in the Bushmen and the Andamanese. The prevailing characteristics of the races inhabiting Europe, North Africa, and South-West Asia are a moderate latitudinal index, a moderate orbital index, a low alveolar index, a low nasal index, and a high cerebral capacity. In the Mongoloid races again the orbital index is usually high, the cranial capacity variable, whilst in its dimensions the skull ranges from brachycephalism in the Siberians and Peruvians to extreme dolichocephalism in the Eskimo. The jaw may be either orthognathous or prognathous.

The study of this Catalogue is essential to all who are interested in physical anthropology, but more especially to those who may be engaged in working with the cranio-logical collection in the Museum of the Royal College of Surgeons of England.

### OUR BOOK SHELF

*The Village Life* (Glasgow: Maclehose, 1879.)

THIS is a volume of poems intended to picture various phases of Scottish village life. It is beyond our province to criticise the quality of the poetry, but it deserves some notice at our hands for the prominence given throughout to the most recent scientific doctrines, especially that of evolution. With the latest teachings of science in this direction the author appears to be thoroughly acquainted, as is evidenced especially in the two poems on "The Schoolmaster" and "The Doctor." It seems to us a noteworthy fact in the progress of science that its latest developments should form so prominent a feature in a work so purely literary, as a series of poems. The author himself, while he has evidently a tenderness for the old beliefs and bygone customs, still, cannot help showing how strong is his leaning to the revelations of the science of to-day. We venture to think that the anonymous author's presentation of the latest results of scientific investigation ought to reassure those who dread that science and poetry cannot co-exist, that the spread of science and the increase of scientific knowledge will leave no room for the exercise of the poet's fancy. If ignorance is a necessary condition for the exercise of this function, it is quite safe to predict that there is no chance of the poet's occupation ever being gone. Let us suggest to the author of the "Village Life," as a

subject to try the mettle of his fancy and the extent of his knowledge, the "Lake Dwellers." We think the present volume is likely to afford a quiet pleasure to many readers, and as a specimen of the versification and to show how clearly and musically the author can put a puzzling problem, we give the following quotation from the poem on "The Doctor":—

"Search as we may, no trace is found  
Of how the man-ape was transformed  
Into the man with speech and creed;  
We know not how he shed his hair,  
Or shortened his fore limbs and rose  
On back-bone straight, with head thrown back,  
With arch'd foot, and supple knee;  
Or by what process came the hue  
Of his now soft and hairless skin,  
Its brown, its red, its jetty black,  
Its yellow, and the tints between;  
Or how the straight and flattened nose,  
Developed from the monkey's face,  
The jaw prognathous, square or thin;  
And above all how speech began—  
How first the inarticulate,  
Long-armed, broad-chested, roaring clan  
Of men-apes, out of shouts and cries,  
Formed syllables and meaning words;  
How, from the jarring harsh discords  
Of brutal sounds there broke instead,  
Liquid utterances, replies,  
Sweet conversation, grave debate?—  
A vast development, so great  
And splendid that the tail-less ape  
At once became the planet's lord,  
A god in reason, as in shape.

The Doctor hoped that searchers keen,  
Might find before the glacial age  
Some traces of an earlier stage—  
Man Pliocene or Miocene—  
A skull, or skeleton that showed,  
The type improving from the ape;  
Some form revealing how a broad  
Divergence intellectual,  
May come from trifling change of shape;  
That showed complete, a reason why  
The glorious art of speech arose;  
How shortened arm, and thickened thigh,  
Deepened the chest, enlarged the lung;  
The larynx and the mouth and nose  
Transforming with the breast and brain,  
Became sonorous, and the tongue  
Shaped simple words, they grew again  
To language musical, and song.  
But though the search is deep and long,  
And evolutionists await  
With eager hope, the early 'brave'  
Emerging from the brutal state;  
He comes not from his ancient grave;  
His grave is lost; his fossil bones  
No geologic era owns."

### LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

#### Artificial Diamonds

THE fate of the Glasgow diamonds, as recorded in NATURE, vol. xxi. p. 203, reminds me of an adventure of my own that happened about ten years ago, and is likely to be repeated by